

Dissertation Title	A Study of Brain Wave Pattern with The Touching Learning of Blinded People
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ABSTRACT

Thailand was one of countries give precedence to care of blinded people. Thailand had increased the number of blinded persons continuously by born or accidents. The government and some private companies established organizations that educate for blinded students in several ages. Blinded people must learn in the different ways, such as tactile graphics or talking calculator. Nowadays, author have a question about blinded people understand the meaning of contents of the tactile pictures or the objects they touched like normal people or not?

The brain computer interfacing (BCI) is the technology that describe leaning patterns of the human. This technology can observe the synapse and chemistry movement in brain. Electroencephalogram (EEG) collecting is easy and inexpensive method to collect the dataset from brain. In this dissertation, researcher used NeuroSky MindWave device, inexpensive device, to collect EEG datasets from blinded and normal people. Datasets were the voltage power of the brain wave signal, such as delta, theta, alpha, beta and gamma that derive from touching learning behaviors. Then, datasets were converted to the meaningful values by Fast Fourier Transform algorithm (FFT). After that, author compared results of normal and blinded people to respond

researcher questions. This dissertation was designed into three main experiments include 1) find the main important EEG brain waves 2) find patterns of blinded and normal people when touch on tactile pictures and 3) find patterns of blinded and normal people when touch on tactile pictures with different positions.

From results, most important waves when touching learning are delta, theta, high-alpha and mid-gamma. In addition, normal people got high value waves in delta, theta, high beta and low gamma when touching on circle shape tactile pictures but blinded people got high value in every wave. This result showed that blinded people use more brain when touching on circle shape pictures. Another, normal people got higher in delta, theta and high gamma when touching on hexagon shape tactile pictures. However, blinded people get higher in delta, theta and low alpha. These results show blinded people use the brain more about the imagination when touching on more angle picture learning. In the same way, blinded people got higher in low alpha when touching on square shape tactile pictures like normal people. The result showed blinded people use the brain more about the conscious when touching on angle picture learning like normal people. Normal people got higher in delta, theta, high beta and low gamma when touching on triangle shape tactile pictures. However, blinded people got higher in delta, theta, alpha, high beta and low gamma when touching on triangle shape tactile pictures. These results showed blinded people use the brain more about the imagination, conscious and thinking when touching on picture learning more than normal people.

Keywords: Brain-Computer Interface, Blinded People, Brain Wave Pattern, Touching Learning